

**What Is Claimed Is:**

1. A process for preparing a pentafluorophenyl acrylate polymer by bulk polymerizing a reaction mixture comprising a pentafluorophenyl acrylate monomer and a radical initiator, wherein the radical initiator is not  
5 soluble in the pentafluorophenyl acrylate monomer, wherein the improvement comprises subjecting the reaction mixture to an ultrasonication treatment, so that the mixing of the initiator and the monomer is enhanced; carrying out the bulk polymerization at a first temperature of 25-200°C for a first period of time; and carrying out the  
10 bulk polymerization at a second temperature of 25-200°C under a vacuum pressure for a second period of time, wherein the second temperature is higher than the first temperature for another period of time, so that residue amounts of the radical initiator, unreacted monomer and oligomer of the monomer are reduced in the resulting product mixture.

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2. The process according to claim 1, wherein said radical initiator is 2,2'-azobisisobutyronitrile.

3. The process according to claim 1, wherein an amount of said  
20 radical initiator used in the reaction mixture ranges from 0.001 to 1 mole per mole of the pentafluorophenyl acrylate monomer.

4. The process according to claim 3, wherein the amount of said radical initiator used in the reaction mixture is about 0.006 mole per mole  
25 of the pentafluorophenyl acrylate monomer.

5. The process according to claim 1, wherein said second temperature ranges from 100 to 200°C, said vacuum pressure ranges from 0.1 to 30 mmHg, and said second period of time ranges from 4 to 36 hours.

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6. The process according to claim 5, wherein said second temperature is about 140°C, said vacuum pressure is about 0.3 mmHg, and said second period of time is about 12 hours.

10 7. The process according to claim 1, wherein said first temperature ranges from 25 to 99°C, and said first period of time ranges from 4 to 36 hours.

8. The process according to claim 1, wherein said first temperature  
15 is about 60°C, and said first period of time is about 12 hours.